



# FORCEnet Science & Technology (S&T) Roadmap:

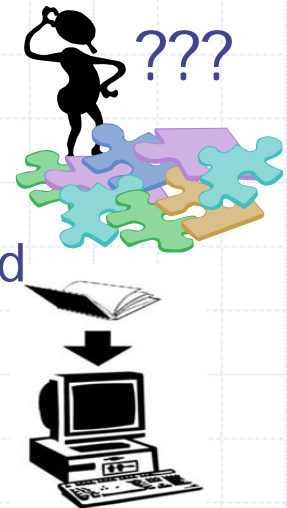
## Assessing S&T Investments Required To Achieve FORCEnet Capabilities

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John Ward  
[Wardj@onr.navy.mil](mailto:Wardj@onr.navy.mil)  
703-866-4000

# What is a Roadmap?

- ◆ A visualization tool for organizing, correlating, assessing and storing information for:
  - S&T product applicability to Naval warfighting capabilities
  - Illustrating linkages among Navy and other DoD research programs, acquisition programs and requirements
- ◆ An analytical aid for assessing S&T investment opportunities for trade-off decisions
  - Choosing alternatives for continued development and technology maturation
- ◆ A central repository of related programmatic and scientific data



Visual tool for identifying and mapping the transition path from basic research to capability demonstrations to Fleet POR transition

# Why Roadmap S&T For FORCEnet?

## ◆ Directed by the FORCEnet Campaign Plan

- "The FORCEnet S&T Roadmap will be derived from the RDT&E database that includes schedules, milestones and transition programs for those science and technology enablers in the FORCEnet domain. This roadmap is also intended to provide FORCEnet S&T near-term transition and long-term alignment recommendations and priorities to CNO N70."



## ◆ Provide a management tool for use internally at ONR and externally among all FORCEnet stakeholders

- Emphasis on visual attributes highlights the relevance of individual technology components of a business strategy

Management tool to aid identifying program execution options for integrated development and capability evolution



# FORCEnet

## Science & Technology (S&T) Roadmap

10-05



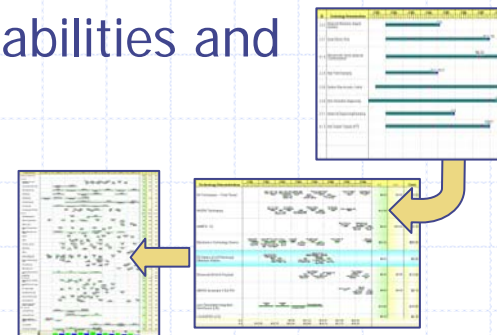
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GAP/EC FNC		FY05				FY06				FY07				FY08				FY09			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
NAVY	<b>PROGRAMS OF RECORD</b>																				
NCDP	<b>NAVAL CAPABILITY GAPS AND ENABLING CAPABILITIES</b>																				
DOD	<b>DOD NET-CENTRIC PROGRAMS / INITIATIVES</b>																				
JOINT	<b>INTEGRATED EXPERIMENTS AND INNOVATION</b>																				
ONR	<b>S&amp;T ENABLING PROGRAMS</b>																				
DARPA	<b>DARPA PROGRAMS</b>																				
311 312 313	<b>ONR D&amp;I PROGRAMS (Categorized by Sub-Area, Thrust, Thrust Objectives and Supporting Programs/Projects)</b>																				
NCW	<b>S&amp;T TAXONOMY OF TECHNOLOGY LIMITATIONS (NCW WG Product)</b>																				

Top Level View  
"Table of Contents"

# FORCEnet S&T Roadmap Content

- ◆ Developed, maintained and viewed using an interactive, electronic, COTS software tool: *Milestones Professional 2002*
- ◆ Can be filtered and searched for specific data
  - Multiple filters possible; for example
    - ◆ Top down (required capabilities to needed S&T); or
    - ◆ Bottom up (S&T products feeding capabilities and transitioning to PORs)





# So...What's Actually In It?

## ◆ PORs (Platforms – 68; Systems – 269)

- Includes schedule data (major milestones)

## ◆ POM06/PR07 FORCEnet related Naval Capability Gaps (13) and Enablers (29)

## ◆ Experimentation (ACTD – 48; Sea Trial – 21)

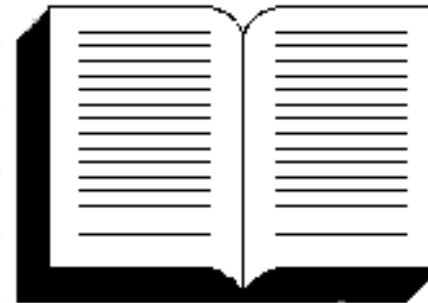
## ◆ S&T Programs

- ONR E&D (6.2/6.3) - 110
- DARPA - 53
- TENCAP - 16
- ONR D&I (6.1/6.2) – 157

## ◆ Hyperlinks to supporting data - 1136

# Content Examples

- ◆ This portion of the brief illustrates various Roadmap elements and contents
- ◆ The information you will see is the result of filtering the Roadmap to display specific data – i.e., a report...



# FORCEnet S&T "Brain Book" – Networks View

## Networks

### Introduction

### Part One

### Part Two

FNT-FY04-01 Position, Location, Information

FNT-FY04-05 Marine and UxV Tactical ISR

FNT-FY04-08 Advanced Communication for FC

FNT-FY04-09 GIG-Compliant Networking

FNT-FY04-12 Joint Maritime Communications

FNT-FY07-02 Automated Control of Large Sen

SHD-FY04-04 Multi-Source ISR tot the Warfigh

STK-FY04-01 Improvised Explosive Devices Sp

STK-FY04-02 Hostile Fire Detection and Resp

STK-FY04-07 Enhance Warfighter Use of ISR

Products Already Transitioned

### Part Three Acronyms

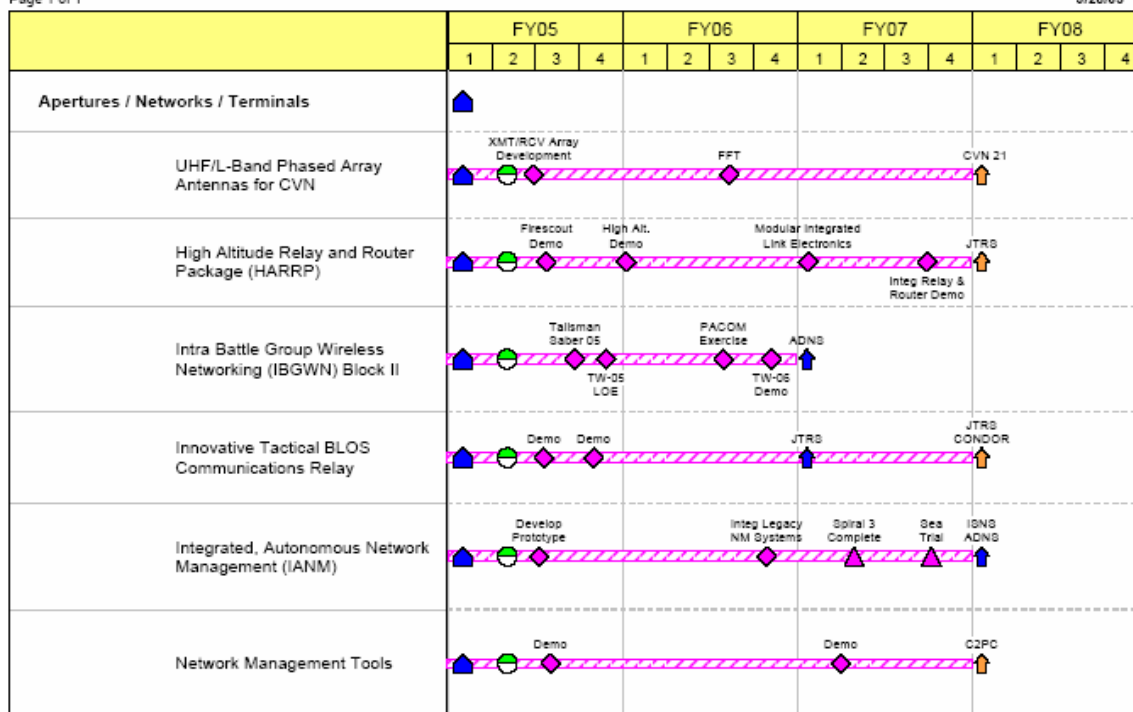
Platforms

Systems

## FORCEnet Science & Technology (S&T) Roadmap FNT-FY04-09

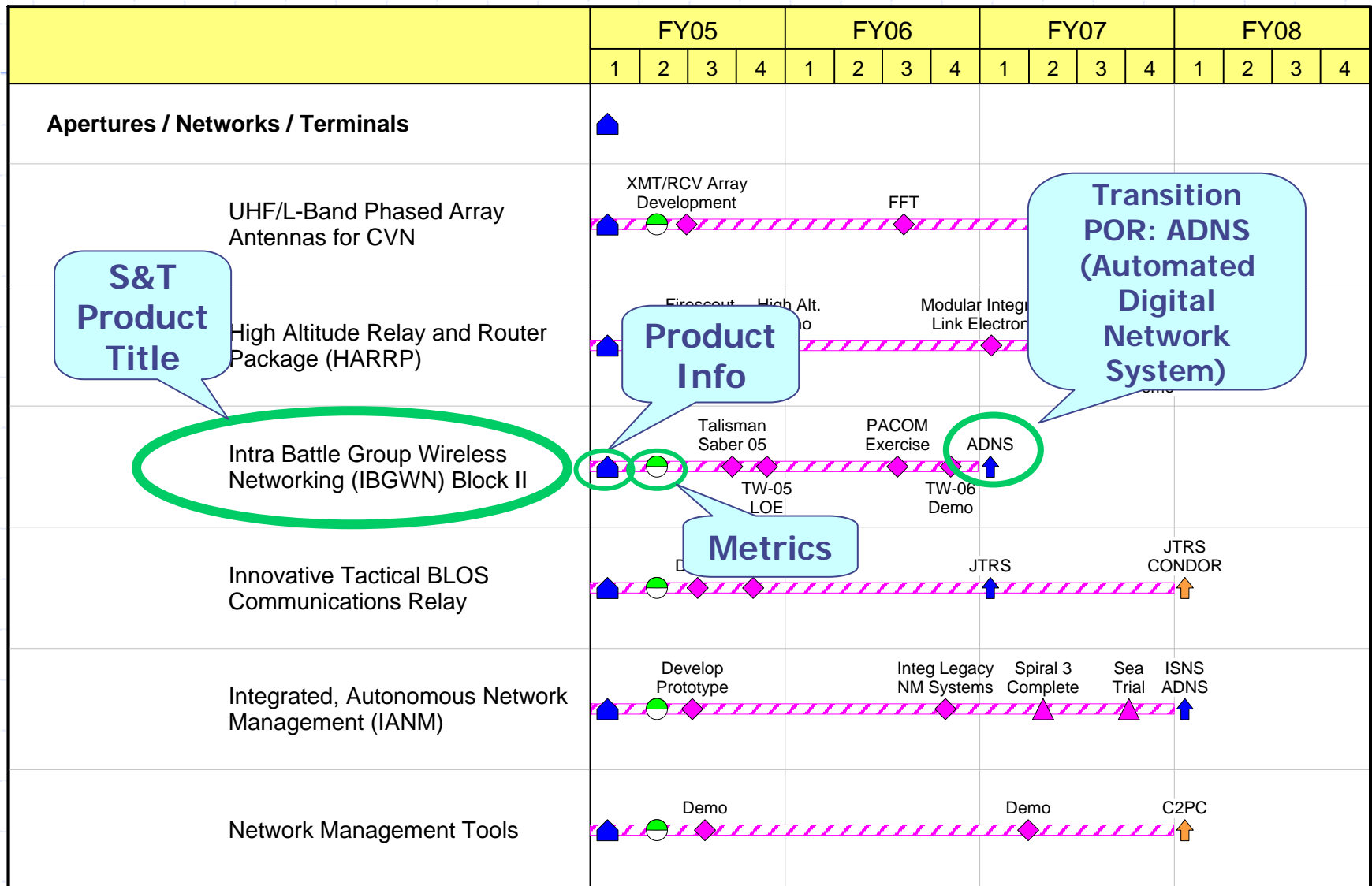
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9/28/05





## FNT-FY04-09 GIG-Compliant Networking





## FNT-FY04-09: GIG-Compliant Networking

EC  
Description

S&T  
Required  
to Achieve  
the EC

**FNT-FY04-09: GIG-Compliant Networking.** Product: radios and Software that reduce human involvement in network control, improve Marine on-the-move comm, improve CSG and ESG mobility.

**EC Metrics:** 1. IBWGN Phase II a) aircraft and submarine wideband line of sight comms, b) stable routing optimization in fading, lossy comm paths, c) use of OSPF and BGP4 on tactical networks. 2. Integrated Autonomous Net Mgmt: a) common net mgmt of nodes with 99.9% consistency among command ships, command shore tactical, Net Ops Centers, b) four or fewer pers reqd on big-deck ships to manage AoR functions, c) central monitoring of as many as 15 distributed nodes tactical shore & ship) in AoR, d) 80% of network problems can be investigated & resolved by on-watch junior pers. 3. Innovative Tactical BLOS Comm Relays: a) a family of modular, scalable, tactical radio payloads, b) insertion within a VTUAV and ground platform, c) secure voice and data communications during ship to shore movement and to the tactical war-fighter over distances of 200 nautical miles, d) interoperability with legacy, mobile, tactical networking structure provided by SINCGARS and EPLRS as well as test emerging capabilities afforded through WNW.

**EC Metrics (Continued):** 4. UHF and L-band phased arrays for CVN: a) comm and COMINT functions, b) 16-20 simultaneous beams, c) meet CV(X) radar cross section reqmts, d) JTRS compliance for as many as 20 channels (send and receive) per array, e) reduce multi-tone intermods by 30 dp, f) provide 50db adaptive nulling, g) reduce weight & cost by a factor of two. 5. Secure Wireless LAN Afloat: a) Wireless capability from the Expeditionary Fighting Vehicle (EFV) to the well deck or stowage areas aboard ship for download of essential navigation data prior to movement, b) EFV-EFV OTM capability and the EFV to dismounted, c) integration of VoIP intercom connectivity into the display heads on the EFV, d) allow for wireless/dismounted VoIP via the DDACT, e) mission critical voice reliability through VoIP on real time ring to all workstationsm f) vehicle cautions and warning will be selectable, upgradeable, and transportable through the IVOX software.

S&T  
Metrics





Associated Products	FY05	FY06	FY07	FY08	FY09	FY10
High Altitude Airborne Relay and Router Package	xxxxx	xxxxx	xxxxx	0	0	0
Integrated, Autonomous Network Management	xxxxx	xxxxx	xxxxx	0	0	0
Intra-Battle Group Wireless Networking Block II	xxxxx	xxxxx	xxxxx	0	0	0
UHF/L-Band Phased Array Antennas for CVN	xxxxx	xxxxx	xxxxx	0	0	0
Innovative Tactical BLOS Comm Relay (Formerly Innovative Relays) (LCPP)	xxxxxx	xxxxxx	xxxxxx	0	0	0
Network Management Tools (LCPP)	xxxxxxx	xxxxxxx	xxxxxxx	0	0	0
<b>Total</b>	xxxxxx	xxxxxx	xxxxxx	0	0	0
<b>Required Products Funded in Higher Priority ECs</b>						
Secure Wireless LAN Afloat (Formerly Secure Mobile Networks) (LCPP)	xxxxxx	xxxxxx	xxxxxx			

# Product Descriptive Summaries

## FNC Product: Intra-Battle Group Wireless Networking Block (IBGWN) II

- **EC Number/Title:** FNT-FY04-09/GIG-Compliant Networking:
- **EC Manager:** Adrian Eley / 311 / 703 588 2812 / [aeleya@onr.navy.mil](mailto:aeleya@onr.navy.mil)
- **Gap Number/Title:** Gap 16 - Ubiquitous, Secure Communications and Network Infrastructure.
- **FY& TRL Start - Stop:** FY03 (TRL 3) - FY06 (TRL 7)
- **Acquisition Program:** ADNS INC III; PEO C4I and Space PMW 160/EdWunner 619-524-7595; [edward.wunner@navy.mil](mailto:edward.wunner@navy.mil); Bill Farmer/619-524-7830
- **Resource Sponsor:** N71C1B Mr. Joseph Corcoran, 703-601-1222/[joseph.corcoran@navy.mil](mailto:joseph.corcoran@navy.mil)
- **Transition Status:** Updated TTA signed 27 Jul 05. On track to transition FY06.
- **Deliverable:** A high bandwidth, line-of-sight, wireless network within the battle group using networking line-of-sight radios in the existing Advanced Digital Network System (ADNS) baseline with ISNS enhancements.

### Assessment\*

Cost	
Schedule	
Technical	
Transition	

Funding	PE Number	FY05	FY06	FY07	FY08	FY09	FY10	FY11
S&T (6.2/6.3)		XXXX	XXXX					
Transition (6.4/6.5)	0204163N	XXXX	XXXX	XXXX				

### Comments/Issues:

- IBGWN Block I capability installed on ESSEX ESG. IBGWN Demo of E-2C JTRS WNW surrogate capability with USS CHANCELLORSVILLE AUG 05.
- FY05 work in progress to install on KITTY HAWK CSG including E-2C squadron and submarine.
- Participant in [Tailsman Saber 05](#) and Trident Warrior 05.

### \*S&T Cost/Schedule/Technical

Green: S&T On-Track for Delivery  
 Yellow: Identified Delivery Issues/Risk but Manageable  
 \*\*Red: S&T Delivery Unlikely or at High Risk

### \*Transition

Green: Adequate Funds Programmed  
 Yellow: Funds Planned/IPT Committed  
 \*\*Red: No Funding Plan

\*\* Requires recommendation on continuation in comments box.

# S&T Product Quad Charts

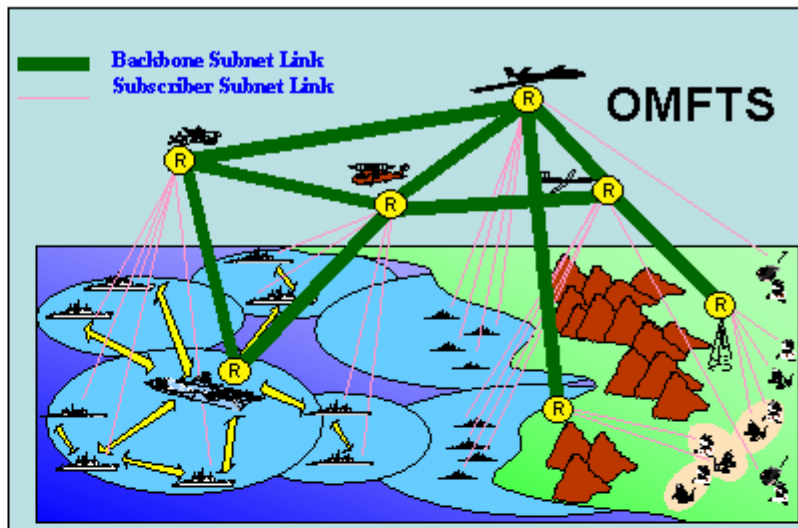
## Intra Battle Group Wireless Networking (IBGWN Block I&II)

### Product Description:

- A high bandwidth, line-of-sight, wireless network within the battle group using networking line-of-sight radios in the existing Advanced Digital Network System (ADNS) baseline.
- Sea Strike/ Sea Shield/FORCENet:** Improves the effectiveness of Naval/Joint tactical IP networks using JTRS (surrogate) radios.

TRL at Start: 3

TRL at Transition: 7

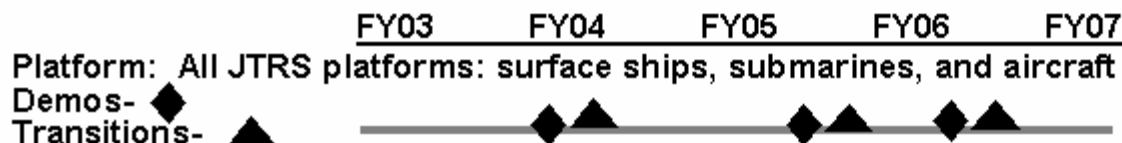


### Planned Demos/Deliverables/Transitions:

- IBGWN Block I **Transitioned** to JTF WARNET and JTRS JPO FY04
- Deploy on E-2C and Submarine FY05-06
- Transition to Air/Submarine FY 05/06

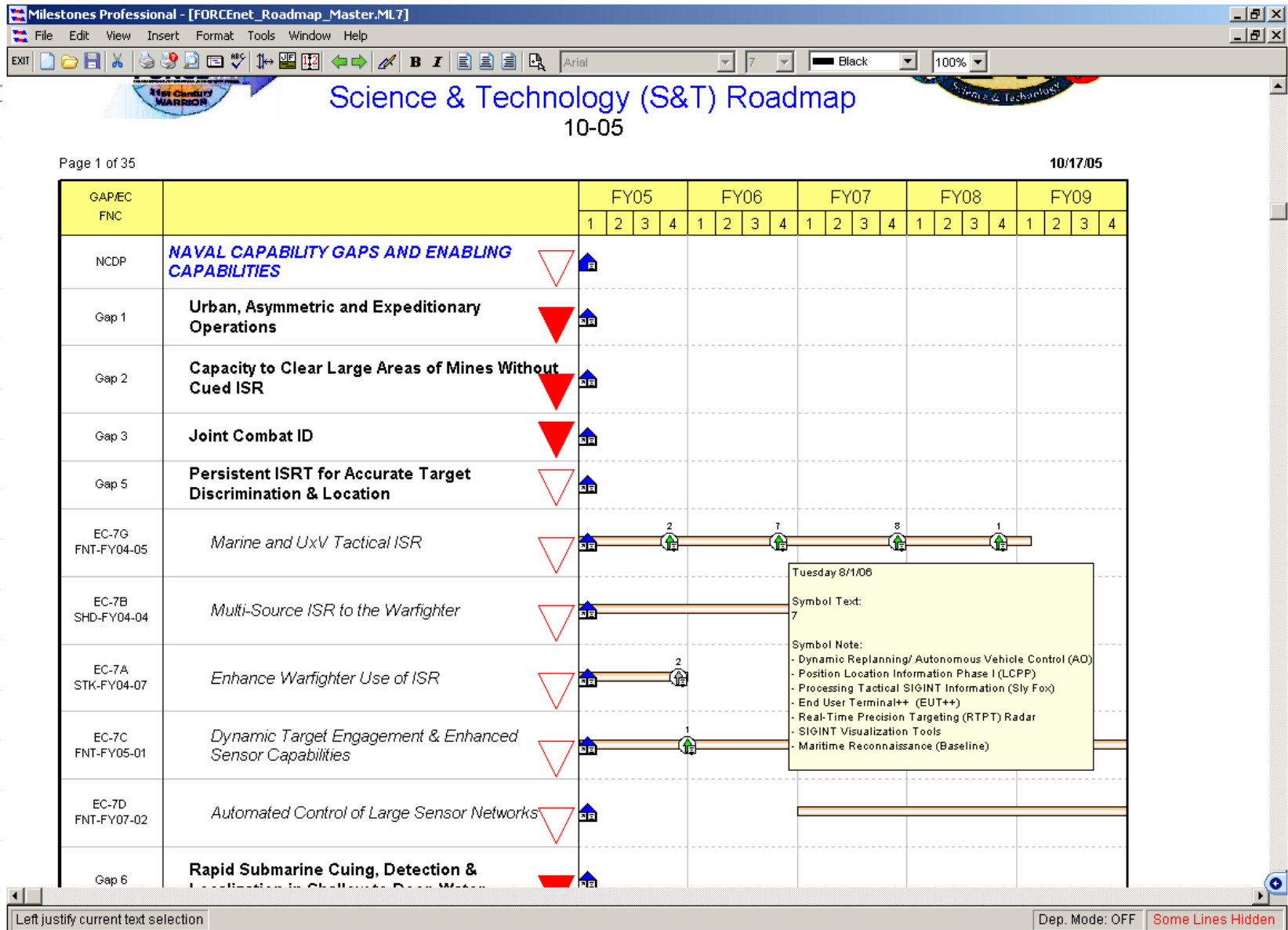
### Warfighting Payoff:

- Alternate high data rate path for disadvantaged platforms for improved SIPRNET throughput, reliability, and redundancy with automated and network routing.
- JTRS Wideband Networking Waveform surrogate network that dynamically adapts to changing conditions within the BG/ARG.
- Extends big-deck ship wideband SATCOM connectivity to ships in company.





# Electronically Embedded Notes





# Where Is The Roadmap?

- ◆ The full FORCEnet S&T Roadmap is published on a secure ONR hosted Citrix Server

- <https://onripnet.onr.navy.mil/>
- ONR account required; send request to FORCEnet S&T Roadmap Manager, [wardj@onr.navy.mil](mailto:wardj@onr.navy.mil)

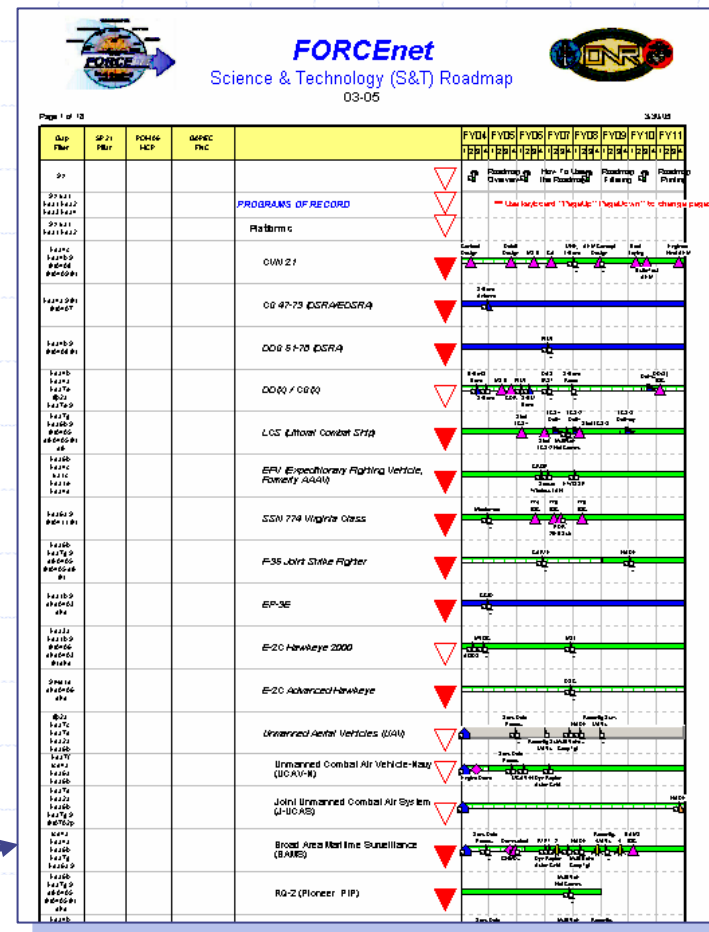
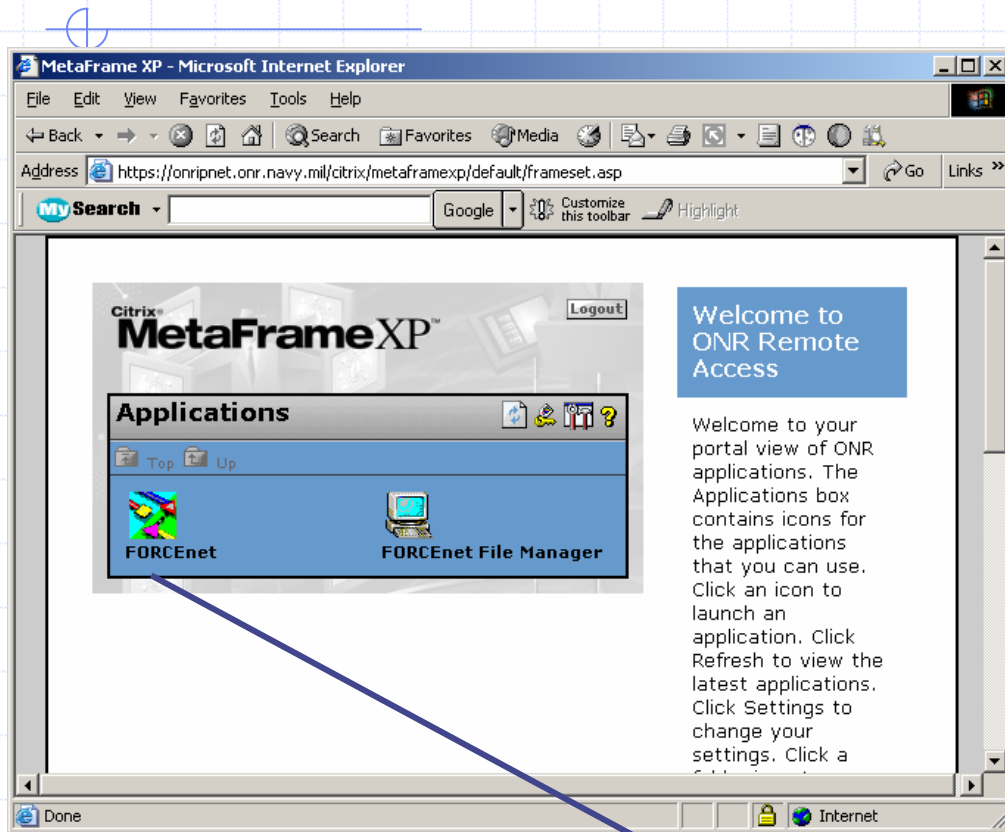


- ◆ The Adobe version of the Roadmap is posted on the official FORCEnet, FIRE & ITECH Websites

- <http://forcenet.navy.mil> (.mil access only)
- <https://fire2.nps.navy.mil>
- <http://cno-n6.hq.navy.mil/ITechNews/index.htm>



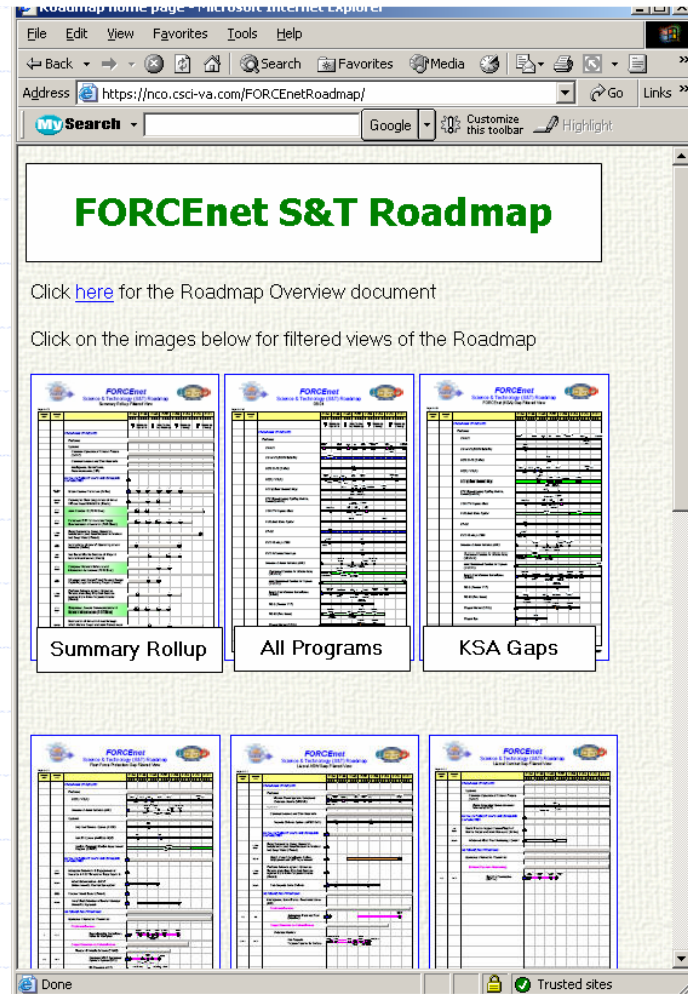
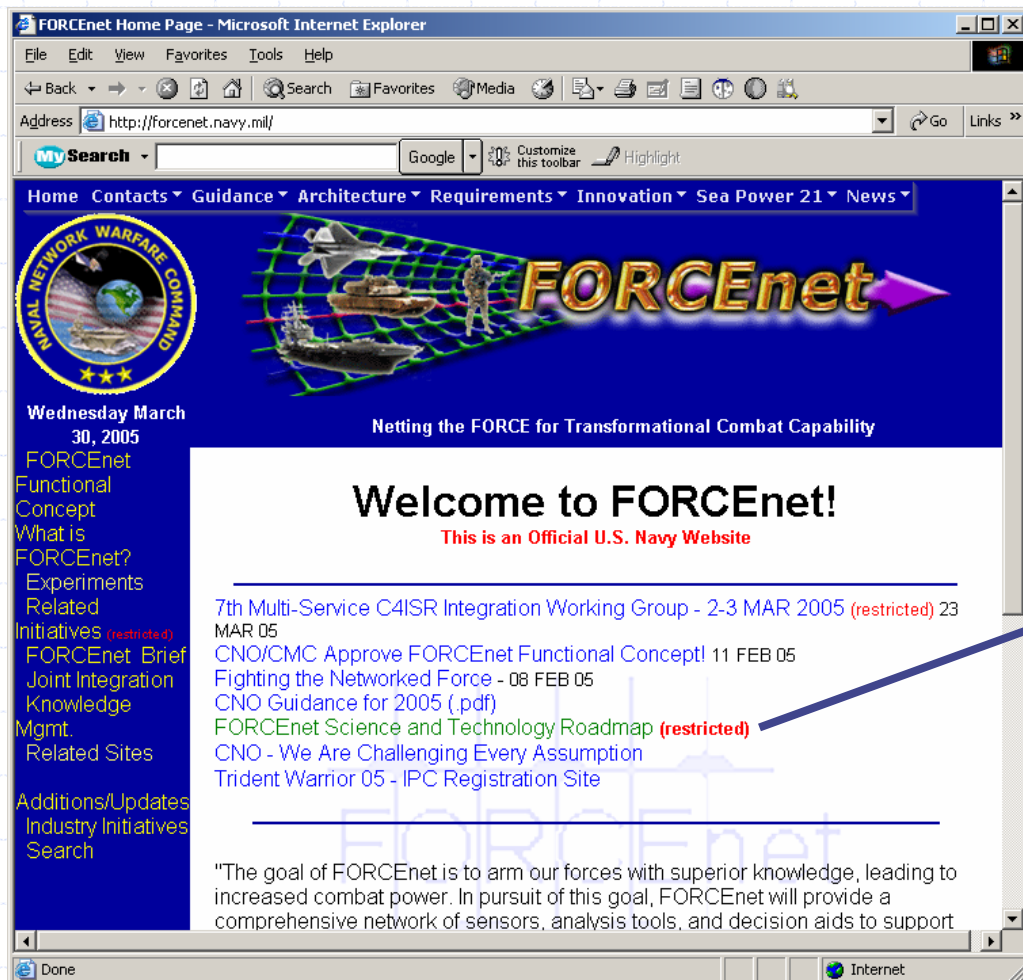
# ONR Citrix Server Hosts S&T Roadmap in Milestones Format



Approx. 20+ users registered to access the Milestones Fn Roadmap on the ONR Citrix host



# S&T Roadmap in Adobe Format



This link is available from the official FORCEnet Web Site  
(hosted by NETWARCOM)

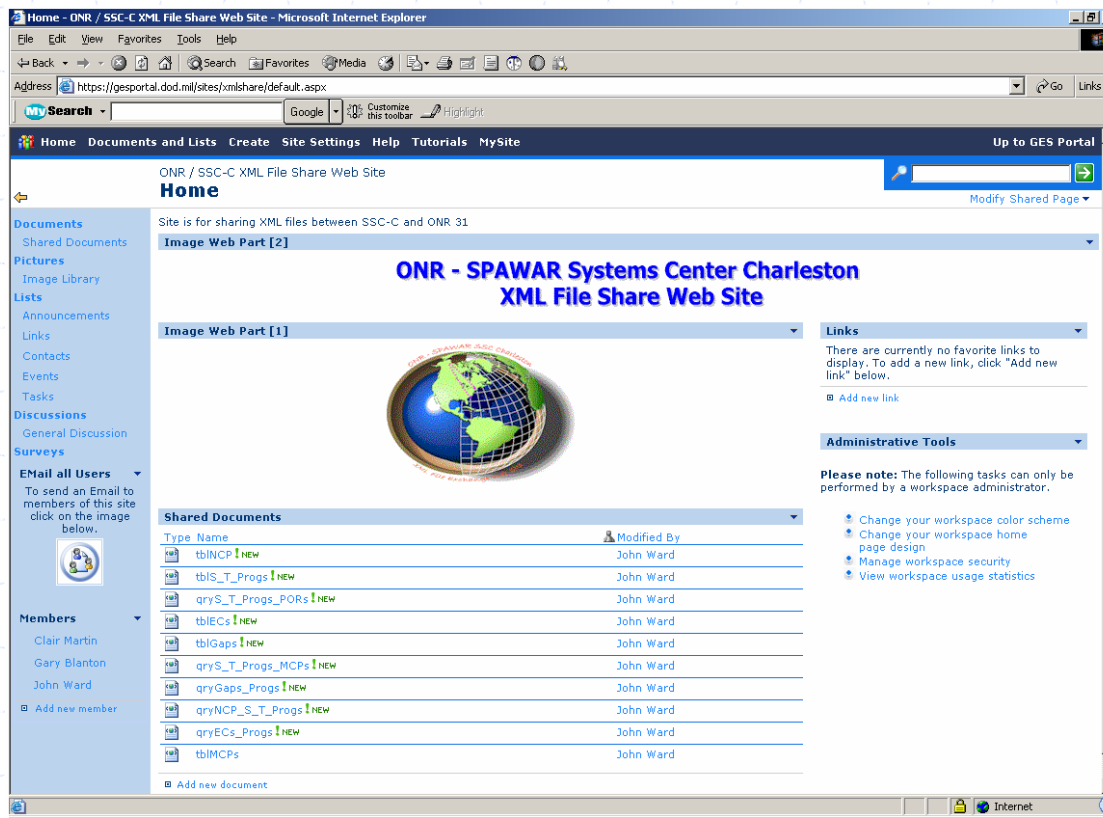
# Roadmap Data Formats

- ◆ Roadmap data is presently maintained in three different formats
  - Milestones Professional format (Visual Basic objects)
  - MS Access database tables
  - XML
- ◆ Data is organized in the Milestones and MS Access formats to emphasize the relationships between data elements
  - Illustrate mapping between S&T products and Programs of Record (transition mapping)
  - Show mapping between S&T products and Naval capabilities
- ◆ XML format presently uses the MS Office schema
  - `xmlns:od="urn:schemas-microsoft-com:officedata"`



# XML File Share Web Site

◆ Located on DoD GES Portal Workspace



<https://gesportal.dod.mil/default.aspx>